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- C) reheating the film to a softening temperature of the homogeneous linear single site catalyzed copolymer;
- D) stretching the film so that an oriented molecular configuration is produced;
- E) quenching the film while substantially retaining its stretched dimensions to set the film in the oriented molecular configuration.

REMARKS

I. Status of the Claims and Above Amendments to the Claims and Specification

With the entry of the above amendments, Claims 1-57 remain pending in this application, with Claims 1, 16, 18, 28, 35, 36, 42, and 43 being the pending independent claims. Each of the independent claims is amended to recite the linear homogeneous ethylene/alpha-olefin copolymer as having a density of at least 0.906 g/cc. Support for this amendment can be found in Applicants' specification at, for example, Page 9 lines 21-25, Page 25 lines 17-20, and Page 32 lines 24-28. Applicants contend that no new matter is presented by these amendments.

II. Applicants' Claims are Patentable over the Prior Art of Record

The Interview Summary dated 19 January 2000 states that the Examiner stated (i.e., during the personal interview) that he would withdraw the rejections based on LAI et al. because the scope of the claims had been narrowed to preclude films made of homogeneous polymers having long chain branching. Applicants agree with this statement, i.e., Applicants' amendment of each of the independent claims to recite the homogeneous copolymer as a linear copolymer does exclude from the

scope of Applicants' claims the "substantially linear" homogeneous copolymers of LAI et al. Applicants note that this amendment distinguishes the linear homogeneous copolymers, e.g., Exxon's linear homogeneous copolymers, from the substantially linear copolymers of LAI et al. While the latter have long chain branching, the former are believed to be devoid of long chain branching, and hence are commonly referred to by those of skill in the art as "linear" homogeneous copolymers.

Moreover, with the entry of the above amendment, Applicants' claims do not overlap the disclosure of "below about .90" in RALPH, as also discussed in the personal interview.

Turning to the remaining §103 rejections, Applicants contended in the personal interview (as well as in the Amendment filed 15 November 1999) that SCHUT teaches away from making a heat shrinkable film using homogeneous copolymers. Applicants further point out that SCHUT states that, because of their high price, it is likely that the Exxon very narrow MWD resins are likely to be used in layers and blends. SCHUT addresses non-economic concerns, i.e., technical concerns, in stating:

For now, the high shear and *low melt strength* of the new resins, caused by their very narrow MWD, means that optimized blow molding and monolayer blown film grades *aren't yet possible*, Exxon says. [SCHUT, at Page 17, Col 3]

Applicants have argued, both in the Amendment filed 15 November 1999, and in the personal interview of 19 January 2000, that the above-quoted statement in SCHUT is a teaching away from the use of the linear homogeneous resins for the making of a heat-shrinkable film. The above-quoted statement acknowledges the low melt strength of the "very narrow MWD" (i.e., homogeneous) resins from Exxon. Those of skill in the art recognized, at Applicants' 13 November 1992 filing date, that downward casting was (and for that matter, still is) the dominant commercial method for making the

solid state oriented heat shrinkable films of the instant invention, and that downward casting requires significantly greater melt strength than is required for the manufacture of a blown film. Moreover, SCHUT warns the reader that the homogeneous resins from Exxon suffer from low melt strength and that even blown film grades are not yet possible. As such, one of skill in the art would have considered these Exxon very narrow MWD (linear homogeneous) resins to be unsuitable for the commercial manufacture of heat-shrinkable films. Applicants contend that this is a teaching away from the use of the very narrow MWD resins in the making of a heat-shrinkable film, especially any of the films recited in Applicant's amended claims, which are solid state oriented.

VAN der SANDEN, like SCHUT, contains no teaching to use the new polymers to make a heat shrinkable film. As pointed out in the 15 November 1999 Amendment, the only actual films disclosed in VAN der SANDEN et al are the 50 micron *blown* films disclosed in the paragraph spanning the bottom of the first column of Page 155 and the top of the second column of this same page. In the personal interview, Applicants contended that blown films are not heat-shrinkable films; blown films are made from a process which is different from heat shrinkable films, and different technical challenges are involved in these different processes. VAN der SANDEN et al also states:

Each converting method (film, extrusion coating, lamination) has its own processing requirements (melt strength, thermal stability, rheology) which must be satisfied to yield the economical production of the packaging structure.

Applicants point out that this statement is in support of their position that different processing requirements and different resin requirements apply to different films. Applicants also contend that this statement stands in support Applicants' position that melt strength is critical to the production of a

heat-shrinkable film. That is, adequate melt strength must be satisfied in order to yield the film. As Applicants have already argued, the melt strength requirements for making a heat shrinkable film are different and more severe than melt strength requirements to make a blown film.

In addition, Applicants note that SCHOENBERG, i.e., one of the primary references utilized in the various §103 rejections relying upon SCHUT and VAN der SANDEN as secondary references, itself acknowledges structural differences between hot blown films and heat shrinkable films:

Of course, if a film having little or no orientation is desired, e.g., non-oriented or non-heat shrinkable film, the film may be formed from a non-orientable material or, if formed from an orientable material may be "hot blown". In forming a hot blown film the film is *not* cooled immediately after extrusion or coextrusion but rather is first stretched shortly after extrusion while the film is still at an elevated temperature above the orientation temperature range of the material. Thereafter, the film is cooled, by well-known methods. Those of skill in the art are well familiar with this process and the fact *that the resulting film has substantially unoriented characteristics*. Other methods for forming unoriented film are well known. Exemplary, is the method of cast extrusion or cast coextrusion which, likewise, is well known to those in the art. [Emphasis Added; SCHOENBERG, Col. 2 lines 18-33]

Applicants contend that the above passage from SCHOENBERG supports Applicants' position that a hot blown film is not an oriented film. See the emphasized language in the above quotation. The fact that SCHOENBERG discloses hot blown films as not being oriented films supports the position that Applicants' claims, in being directed to heat-shrinkable films, do not encompass hot blown films. A paragraph in Column 1 of SCHOENBERG, considered in combination with the above-quoted

paragraph from Column 3, supports Applicants' position that a hot blown film is *structurally* different from a heat shrinkable film:

The terms "orientation" and "oriented" are used herein to generally describe the process step and resultant product characteristics obtained by stretching and immediately cooling a resinous thermoplastic polymeric material which has been heated to a temperature within its orientation temperature range *so as to revise the molecular configuration of the material by physical alignment of the crystallites and/or molecules of the material* to improve certain mechanical properties of the film such as, for example, shrink tension and orientation release stress. ... The term oriented is also used herein interchangeably with the term "heat shrinkable" with these terms designating a material which has been stretched and set by cooling while substantially retaining its stretched dimensions. An oriented (i.e. heat shrinkable) material will tend to return to its original unstretched (unextended) dimensions when heated to an appropriate elevated temperature. [Emphasis Added, SCHOENBERG Column 1 lines 47-68.]

The above passage from Column 1 of SCHOENBERG supports Applicants' position in two ways: (1) oriented films have physical characteristics which are different from hot blown films, as is apparent from the molecular configuration discussion in the above-quoted paragraph; and (2) that heat-shrinkable films are considered, by those of skill in the art, to include only oriented films, and that conversely, heat shrinkable films do not include hot blown films because they are not considered to be oriented films.

As further support for Applicants' position, Applicants direct attention to RALPH, as follows:

...this was demonstrated in a series of tests wherein blown (non oriented, non heat-shrinkable) film was prepared from several formulations... [RALPH, at Col. 6, lines 52-53.]

Thus, it is clear that others skilled in the art recognize blown film as different from a heat shrinkable film.

Applicants further contend that upon considering:

- (a) that hot blown films are not heat shrinkable films, and
- (b) that according to SCHUT the very narrow MWD polymers of Exxon do not have high enough melt strength for the making of a monolayer blown film,

one of skill in the art would not have been led to use the polymers described in SCHUT and VAN der SANDEN to use these very narrow MWD polymers to make heat shrinkable films, because heat-shrinkable films are known to those of skill in the art to be produced commercially using a downward casting process, which fails when attempting to make a heat shrinkable monolayer film from a polymer exhibiting relatively low melt strength.

Combining the two above-quoted paragraphs from SCHOENBERG (and further considering the passage from Column 6 of RALPH, quoted above), it is clear that a hot blown film is not a heat-shrinkable film, and that heat-shrinkable films are structurally different from hot blown films.

Applicants' claimed heat shrinkable film has characteristics different from blown films because is produced by a process which is fundamentally different from the process used to make all blown films.

That is, Applicants' claimed heat shrinkable films are produced by orientation while the polymer is in the solid state, i.e., at the softening temperature of the polymer. In contrast, blown films are "oriented" while the polymer is molten, which those of skill in the art do not consider to produce an oriented film.

Thus, Applicants claimed films are fundamentally different from the films described in both SCHUT

and VAN der SANDEN et al. Those of skill in the art recognize this fundamental difference, and as a result would not be led to use the new Exxon polymer in the commercial type processes for making heat shrinkable films described in SCHOENBERG. In fact, those of skill in the art, upon reading in SCHUT that the new Exxon polymers lack adequate melt strength for the making of monolayer blown films, would be more likely to be led away from trying the new Exxon polymers for the making of heat shrinkable films, than to be led to try to make a heat shrinkable film with the Exxon polymer which is acknowledged as having low melt strength.

In addition to the above arguments, Applicants again direct attention to the unexpected results argued at Pages 27-29 of their 15 November amendment.

CONCLUSION

In view of the above amendments and arguments, Applicants respectfully contend that the claims are in condition for allowance, and Applicants respectfully request reconsideration of the claims, with a view towards allowance.

Should there be any questions or otherwise needs to discuss any matters related to this application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Respectfully Submitted,



Rupert B. Hurley Jr.
Reg. No. 29,313
(864) 433-3247

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